

# INTERNATIONAL SEARCH REPORT

PCT/GB2004/004762

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G06F17/50 C07K14/47 C12Q1/48

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06F C07K C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, Sequence Search

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>ROSHAK AMY K ET AL: "The human polo-like kinase, PLK, regulates cdc2/cyclin B through phosphorylation and activation of the cdc25C phosphatase"</p> <p>CELLULAR SIGNALLING; vol. 12, no. 6, June 2000 (2000-06), pages 405-411, XP002328179 ISSN: 0898-6568 the whole document</p> <p style="text-align: center;">-/-</p>	1-51

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

22 August 2005

Date of mailing of the international search report

19. 10. 2005

Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>STEVENSON CHRISTOPHER S ET AL: "The identification and characterization of the marine natural product scytonemin as a novel antiproliferative pharmacophore" JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS, AMERICAN SOCIETY FOR PHARMACOLOGY AND EXPERIMENTAL THERAPEUTIC, US, vol. 303, no. 2, November 2002 (2002-11), pages 858-866, XP002311120 ISSN: 0022-3565 the whole document</p>	1-51
A	<p>LIU XIAOQI ET AL: "Polo-like kinase 1 in the life and death of cancer cells." CELL CYCLE (GEORGETOWN, TEX.) 2003 SEP-OCT, vol. 2, no. 5, September 2003 (2003-09), pages 424-425, XP009047773 ISSN: 1538-4101 the whole document</p>	1-51
A	<p>WO 99/09146 A (SMITHKLINE BEECHAM CORPORATION) 25 February 1999 (1999-02-25) the whole document</p>	1-51
A	<p>ELIA ANDREW E H ET AL: "The molecular basis for phosphodependent substrate targeting and regulation of Plks by the Polo-box domain." CELL, vol. 115, no. 1, 3 October 2003 (2003-10-03), pages 83-95, XP002328181 ISSN: 0092-8674 the whole document</p>	1-51
A	<p>DATABASE UniProt 'Online! 1 October 1996 (1996-10-01), "Serine/threonine-protein kinase PLK1 (EC 2.7.1.37) (Polo-like kinase 1) (PLK-1) (Serine/threonine-protein kinase 13) (STPK13)." XP002341590 retrieved from EBI accession no. UNIPROT:PLK1_HUMAN Database accession no. PLK1_HUMAN the whole document</p>	36-41, 49-51

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE Geneseq 'Online!  9 April 2002 (2002-04-09), "Mammalian  polo-like kinase (Plk)."  XP002341591  retrieved from EBI accession no.  GSP:AAU74656  Database accession no. AAU74656  the whole document  &amp; WO 01/90401 A (THE GOVERNMENT OF THE  UNITED STATES OF AMERICA, AS REPRESENTED  BY THE) 29 November 2001 (2001-11-29)</p>	<p>36-41,  49-51</p>
X	<p>DATABASE UniProt 'Online!  10 May 2005 (2005-05-10), "Polo-like  kinase variant (Fragment)."  XP002341592  retrieved from EBI accession no.  UNIPROT:Q596D0  Database accession no. Q596D0  the whole document</p>	<p>49,50</p>

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## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 33-35, 52-55  
because they relate to subject matter not required to be searched by this Authority, namely:  
Although claims 26-29 and 42-47 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☒ Claims Nos.: 53-55  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:  
36-41, 49-51
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Although claims 26-29 and 42-47 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Continuation of Box II.1

Claims Nos.: 33-35, 52-55

Claims 33-35: Rule 39.1(v) PCT - Presentation of information

Continuation of Box II.2

Claims Nos.: 53-55

Present claims 52-55 relate to an extremely large number of possible compounds/methods. In fact, the claims contain so many options that a lack of clarity (and conciseness) within the meaning of Article 6 PCT arises to such an extent as to render a meaningful search of the claims impossible "substantially as described herein and with reference to the accompanying drawings". Consequently, the search has not been carried out for claims 52-55.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13,15, 35 (completely), 14,16 (partially)

A method of in silico screening for modulators of PLK, wherein the method is based on the structure-coordinates of table 2 or a rational drug-design assay based on detecting whether a candidate compound forms association with one of the kinase domain residues as listed in claim 14.

2. claims: 14, 16 (partially)

An in vitro assay for a candidate compound capable of modulating PLK, said assay being based on detecting whether a candidate compound forms association with one of the kinase domain residues as listed in claim 14.

3. claims: 17-19

Use of the compounds as listed in claim 17 (i)-(iii) in an assay for identifying candidate compounds capable of modulating PLK.

4. claims: 20-25

A PLK modulator according to claim 20.

5. claims: 26-32,42-48

Therapeutic application or process of preparing the modulators according to claims 26-32.

6. claims: 36-41,49-51

A fragment of the N-terminal domain of PLK and use thereof for screening of modulators or solving the crystal structure, etc.

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9909146	A	25-02-1999	EP 1007645 A1	14-06-2000
			JP 2001514882 T	18-09-2001
			WO 9909146 A1	25-02-1999
			US 6063609 A	16-05-2000
			US 6245544 B1	12-06-2001
WO 0190401	A	29-11-2001	AU 6341801 A	03-12-2001
			WO 0190401 A2	29-11-2001